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09/441,380	11/16/1999	JERRELL P. HEIN	75622.P0007	4250

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EXAMINER
SINGH, RAMNANDAN P

ART UNIT	PAPER NUMBER
2644	4

DATE MAILED: 06/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/441,380	Applicant(s) HEIN, JERRELL P.	
	Examiner Dr. Ramnandan Singh	Art Unit 2644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 November 1999* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8 and 11-16* is/are rejected.

7)☒ Claim(s) *9 and 10* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 November 1999* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Specification

Content of Specification

1. Abstract of the Disclosure: See MPEP § 608.01(f). A brief narrative of the disclosure as a whole in a single paragraph of 150 words or less commencing on a separate sheet following the claims. In an international application which has entered the national stage (37 CFR 1.491(b)), the applicant need not submit an abstract commencing on a separate sheet if an abstract was published with the international application under PCT Article 21. The abstract that appears on the cover page of the pamphlet published by the International Bureau (IB) of the World Intellectual Property Organization (WIPO) is the abstract that will be used by the USPTO. See MPEP § 1893.03(e).

2. The Abstract of the Disclosure is too long.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-8, 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang [US 5,881,130] in view of Clemente [US 6,092,927].

Regarding claims 1, 5 and 7, Zhang teaches a method and apparatus for signal processing 214 of a telephone line. Fig. 1 shows a switched telephone network, wherein lines TIP and RING run to switch 114, and are connected to one of the subscriber lines 112A or 112B. Further, Fig. 2 shows a portion 200 of measurement unit

116 comprising interface and control circuitry 212 and detection circuit 210. The detection circuit 210 includes microprocessor circuitry 214 which may be a general purpose signal processor [col. 3, lines 29-39]. Current amplifier 224 and voltage amplifier 226 are coupled to the TIP and RING lines, wherein the outputs of current amplifier 224 and voltage amplifier 226 are provided to Analog to Digital Converter (ADC) 222. The ADC 222 converts the current and voltage signals into digital forms and passes the **samples** to microprocessor 214 where they can be used in the process of determining an instantaneous power dissipation of the line component , such as a load coil [col. 3 line 66 to col. 4, line 48]. In addition, at step 318, samples are taken using ADC 222. Samples of both the current and voltage are taken. **The samples are stored in memory in microprocessor circuitry 214 for later processing** [Figs. 2, 3; col. 8, lines 34-37].

Zhang does not teach expressly determining the temperature of a linefeed component using the instantaneous power dissipation of the component. However, it may be noted that the method of determining the temperature of a power device using the instantaneous power dissipation is well-known in the art.

Clemente teaches a method and apparatus for determining the temperature of a discrete power semiconductor from an analog integrated circuit. The method includes determining the voltage the power semiconductor and the current through the power semiconductor, thereby determining the instantaneous power dissipated in the power

semiconductor [Abstract; col. 1, lines 46-53]. Fig. 2 illustrates a method of determining the temperature of a discrete power semiconductor using instantaneous power dissipation P_1 in the power semiconductor [Eqs. 1-3; col. 4, line 12 to col. 6, line 37].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the temperature determining technique of Clemente using the instantaneous power dissipation of a power component with the current and voltage samples stored in the microprocessor 214 of Zhang.

The suggestion/motivation for doing so would have been to provide the availability of temperature information, alone or combined with the instantaneous power dissipation, allows the implementation of sophisticated protection techniques into complex functions (like modem power modules) to achieve substantially higher levels of operational reliability [Clemente; col. 2, lines 6-21].

Regarding claims 2, 6 and 8, , Clemente teaches an overprotection shutdown when the temperature exceeds a threshold value of the temperature for a powered device. Obviously, this threshold temperature can also applied to set an alarm device, if needed. Further, since the temperature difference between two points is equivalent to voltage difference, whose measurement using a comparator is well known in the art [col. 2, lines 13-15; col. 4, lines 19-22]

Regarding claim 3, Zhang teaches an interface and control circuitry 212 that provides an **interface** to switch 114. As a result, the combination of Zhang and Clemente can monitor each linefeed component connected to the subscriber loop interface.

Regarding claim 4, Zhang teaches microprocessor circuitry 214 that is programmable [Zhang; col. 9, lines 19-32].

Regarding claim 11, the combination of Zhang and Clemente teaches an integrated circuit, wherein the signal processing integrated circuit could be implemented in low voltage , high density technologies [Clemente; col. 1, lines 14-34].

Regarding claim 12, the combination of Zhang and Clemente teaches a non-volatile memory (NMRAM) wherein parameters and a program could be stored [Zhang ; col. 3, lines 34-51].

5. Claims 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang [US 5,881,130] in view of Patel [US 4,982,307].

Regarding claims 13, 15 and 16, Zhang teaches a signal processor 210 connected to ADC 222, wherein ADC 222 samples a current measurement of a

subscriber loop received from current amplifier 224 and a voltage measurement across the subscriber loop received from voltage amplifier 226 [Figs. 2, 3; col. 8, lines 34-37].

Zhang does not teach expressly a linefeed driver for driving the subscriber loop.

Patel teaches a thermal protection circuit for an integrated circuit (IC) subscriber line interface wherein the thermal protection circuit is employed to sense temperature of the solid state subscriber line interface and shut-down the circuit when a designated upper limit temperature is reached [col. 2, lines 54-57]. Fig. 2 illustrates a linefeed driver High Voltage Subscriber Line Interface loop (HVSLIC) 30 that feeds a –48 V dc voltage to the subscriber loop across the TIP and RING leads from a Central Office, wherein a TIP-RING fuse circuit 34 functions as a detector , which monitors the output of a common-mode amplifier circuit 33 [col. 3, lines 62-68; col. 4, line 67 to col. 5, line 10].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the linefeed driver of Patel to Zhang so as to provide thermal protection to the integrated subscriber line interface circuit and monitor the status of each fuse by taking measurements before and after the TIP-RING fuse circuit 34. These two measurements of each TIP and RING are essential, because a combined short of TIP and/or RING leads to ground [col. 1, lines 31-36].

Regarding claim 14, Patel teaches taking first voltage measurement before the fuse location and second voltage measurement after the fuse for the TIP circuit. Since the fuse contains a constant resistance, the difference in the two voltage measurements is proportional to the TIP current. A similar thing hold for RING measurements [Fig. 3; col. 6, lines 28-62].

Allowable Subject Matter

6. Claims 9-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(i) Jones et al [US 6,489,793 B2] discloses controlling the temperature of an electronic device using instantaneous power dissipation [col. 1, lines 22-38].

(ii) Zhou teaches thermal shut-down circuitry to detect and respond to potentially dangerous current levels on a subscriber loop [Figs. 3, 5; col. 6, lines 43-58; col. 7, lines 14-36].

(iii) Pasetti et al [US 5,596,637] teaches a thermal protection device for telephone systems, which operates, whenever the temperature reaches a predetermined upper threshold level [col. 3, lines 44-48].

(iv) Apfel teaches a SLIC with reduced power dissipation.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Ramnandan Singh whose telephone number is (703)308-6270. The examiner can normally be reached on M-F(8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester Isen can be reached on (703)-305-4386. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9314 for regular communications and (703)872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)306-0377.

Dr. Ramnandan Singh
Examiner
Art Unit 2644

June 13, 2003

FORESTER W. ISEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600